Production and Field Establishment of *Psyllaephagus bliteus* for Control of Red Gum Lerp Psyllid on Eucalyptus

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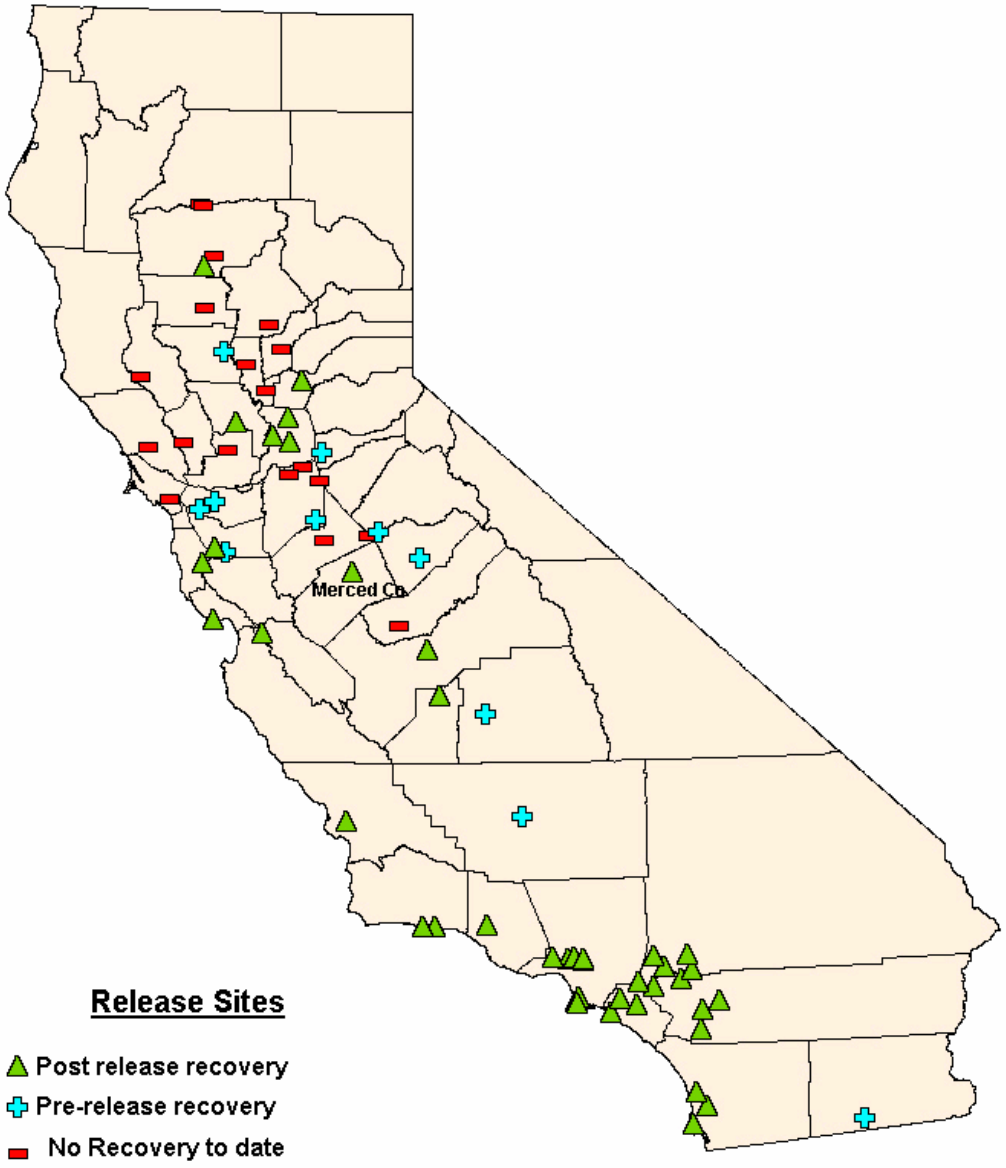
Progress toward the biological control of the red gum lerp psyllid (RGLP), *Glycaspis brimblecombei* Moore, continued through 2002. It is predominantly a pest of red gum eucalyptus, *Eucalyptus camaldulensis* Dehnh, in California. The primary objective during this year was to increase rearing facility productivity, and release the encyrtid parasitoid, *Psyllaephagus bliteus*, in all counties desiring to control the psyllid pest. In addition, monitoring activities were expanded to determine if the parasitoid is establishing in the many geographical locations where it has been released.

Rearing procedures were continued as described in the 2001 Biological Control Program Report. In 2002, over 31,000 parasitoids were produced at the California Department of Food and Agriculture (CDFA) Meadowview greenhouse facility for field release. This provided the means for scientists at the CDFA and University of California (UC) Berkeley to release a minimum of 400 parasitoids in at least one location in each affected county that had not received parasitoids prior to 2002 (Table 1). At the time of release, a 10-minute inspection for parasitoid exit holes was conducted at each site. In addition, leaf collections were made prior to the release of parasitoids to determine if parasitoids were already present at the site. Fifteen branches containing leaves infested with the RGLP were placed in a large paper bag, returned to the lab, and held for parasitoid emergence. Pre-release samples were of particular importance during 2002 because a number of releases had occurred (predominantly in coastal areas) in the previous eighteen months. The UC Berkeley program (i.e., Dr. Don Dahlsten and associated UC Cooperative Extension scientists) determined that by the fall of 2001, previous releases had resulted in the establishment of *P. bliteus* in the counties of Los Angeles, San Diego, San Mateo, and Ventura. In addition to the California releases, 928 parasitoids were sent to the Florida Department of Agriculture for release in that state during July of 2002.

Monitoring for post release parasitism was conducted by the CDFA in 22 counties. The majority of these sites represented locations where *P. bliteus* had been released during the nine months prior to the fall of 2002, primarily in the interior valley regions of California. The sample period ran from August to October. With the exception of lower desert regions, this is the seasonal time period when RGLP populations reach peak abundance, and red gum eucalyptus demonstrates considerable leaf loss and stress if under extensive attack. Samples consisted of approximately 15 branch terminals, 30 to 45 centimeters in length, from approximately five trees at each site. The intent was to obtain 100 leaves containing a minimum of 100 occupied lerps for population counts and for detecting signs of parasitism. Counts on 50 leaves were made and psyllids were inspected for signs of late stage parasitoid development. In addition, 50 leaves or more were held in screened cages for parasitoid emergence for 30 days. This was an additional practice used for detecting parasitoid establishment.

Red Gum Lerp Psyllid Parasitoid Release Site Status
UC Berkeley and CDFA, Fall 2002



By the fall of 2002, populations of *P. bliteus* were determined to have persisted at 54 of the 72 release sites (Figure 1). Summary results represent data collected from the 22 counties monitored in the fall of 2002, data from the UC Berkeley program, and pre-release records pertaining to 2002 late-summer/fall release sites. Pre-release samples during 2002 releases determined that the parasitoid was present at 12 locations prior to release. The adaptability of this parasitoid throughout the geographic range of red gum eucalyptus remains unclear. For example, although parasitoid populations have appeared to become established in Sacramento County, densities were low throughout 2002. In contrast, a prominent population of *P. bliteus* was recorded nine months following its November 2001 release in Merced County (Figure 1). County biologist R.J. Aguilar determined its spread to have exceeded 20 miles east and west, and at least 12 miles north and south of the original release site by August of 2002. It was found in 46 of the 54 sites surveyed in Merced County. During August and October, releases were made in western Modesto and Tuolumne Counties (east and northeast of Merced County). Parasitoid populations were determined to be present prior to release in each instance. The Merced population represented the closest, well-established population in the region, and was most likely the source for these Sierra foothill populations that existed prior to the 2002 releases in late summer.

Table 1. *Psyllaephagus bliteus* Release Data by County from 2000 through 2002

County	Release Dates/ Periods	Number of Release Sites	Number Released
Alameda	6/14/2000 - 8/23/2001*	2	697
Amador	8/30/2002 – 9/6/2002	1	802
Butte	7/9/2002	1	735
Calaveras	6/20/2002	1	1047
Colusa	7/17/2002	1	408
Contra Costa	5/10/2002	1	654
Fresno	6/30/2000 -8/30/2001	1	535
Glenn	9/13/2001	1	569
Imperial	6/25/2002	1	998
Kern	7/23/2002	1	245
Kings	5/29/2002	1	522
Lake	9/13/2002	1	625
Los Angeles	10/2/2001	8	4,659
Madera	6/5/2002	1	752
Marin	5/15/2002	1	571
Mariposa	8/2/2002	1	728
Merced	11/9/2001	1	582
Monterey	6/21/2001	1	763
Napa	4/30/2002	1	650
Orange	11/6/2000 - 12/13/2001	3	1,846
Placer	7/2/2002 – 9/25/2002	2	1,514
Riverside	10/30/2001 – 3/29/2002	6	4,596
Sacramento	7/27/2001 – 11/14/2002	4	3,039
San Benito	8/7/2002	1	587
San Bernardino	10/18/2001 – 3/6/2002	5	3,775
San Diego	9/15/2000 - 11/27/2001	3	2,035
San Joaquin	4/18/2002 – 9/20/2002	2	1,070
San Luis Obispo	9//27/2001 – 1/11/2002	1	2,734
Santa Barbara	2/6/2001 – 7/26/2001	2	270
Santa Cruz	8/16/2002	1	610
Shasta	6/25/2002	2	2,002
Solano	9/28/2001 – 7/3/2002	1	1,405
Sonoma	9/19/2001 – 10/26/2001	1	768
Stanislaus	5/24/2002	1	836
Sutter	5/24/2002 - 6/20/2002	2	1,465
Tehama	6/19/2002	2	1048
Tuolumne	8/21/2002 - 10/3/2002	2	875
Tulare	6/11/2002	1	800
Yolo	6/11/2002	1	573
Yuba	6/26/2002	1	955
Total		**71**	**49,466**

*Where more than one release was made, the release period is presented.

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